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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/024,255	12/21/2001	Ian Glenn Towe	T8465082US	3346

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12/23/2003

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EXAMINER

TESKIN, FRED M

ART UNIT

PAPER NUMBER

1713

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
10/024,255

Applicant(s)
Towe, et al.

Examiner
Fred Teskin

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— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE (3) MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Nov 4, 2003
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above, claim(s) 2-6 and 10-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 7-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 7, 9 6) ☐ Other:

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1. Applicants' election, in paper no. 11, of the invention of Group I, claims 1-9, and of the species "a thermoplastic elastomeric olefin comprising a polypropylene continuous phase with an ethylene-propylene-diene monomer or ethylene-propylene rubber rubbery phase dispersed through the polypropylene continuous phase" is acknowledged. Because applicants did not distinctly and specifically point the supposed errors in the restriction requirement, the election is treated as an election without traverse (see MPEP 818.03(a)).

2. Claims 2-6 and 10-12 stand withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to non-elected species and a non-elected invention, respectively. Election was made **without** traverse in paper no. 11.

3. The search for the elected species has been expanded to the extent of determining patentability of the generic claims to the elected invention. Upon the allowance of a generic claim, applicants will be entitled to consideration of claims to additional species which are written in dependent form or which otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141.

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4. Claims 1 and 7-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically, the following grounds for indefiniteness apply to the indicated claims.

(A) Claim 1 is ambiguous in the recitations "very low density" and "ultra low density". Neither expression is explicitly defined in the antecedent disclosure and, from the evidence of record, it is not clear whether one skilled in the art would know what density values each is intended to cover. Thus, a "very low density" polyethylene may be, according to Giuffrida (US '924, col. 6, ll. 20-21), a linear low density polyethylene having any density value below about 0.915; whereas Hodgson, Jr. (col. 3, lines 59-60 and 66-68) characterizes a very low density ethylene copolymer as having a density within the closed range of about 0.88 to about 0.915. And as for "ultra low density", none of the prior art of record appears to delimit the numerical densities embraced thereby. Consequently, it is unclear what densities are intended to be covered by the two expressions in the context of the present invention.

(B) Claims 1 and 9 are confusing with regard to the listing of "rubbery phase" species for binder (iv). Both claims recite the

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species *cumulatively* (i.e., "ethylene-propylene-diene monomer, ... natural rubber, ethylene vinyl acetate rubbery phase ...") whereas the specification describes the various species as *alternative* rubbery phases. See, e.g., page 5, lines 17-20; note the "or" conjunction between "natural rubber" and "ethylene vinyl acetate," which is missing from claims 1 and 9. Clarification and appropriate correction are required.

(C) Claim 3 provides the limitation to "[t]he heterogeneous ion exchange membrane". There is inadequate antecedent basis for "the ... membrane" in the claims (*cf.*, claims 1 and 2, first line of each).

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 103© and potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103(a).

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 and 7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US 5346924 to Giuffrida, alone or with reference to US 5206075 to Hodgson, Jr.

Giuffrida discloses a heterogeneous ion exchange membrane comprising a binder of a linear low density polyethylene (LLDPE) or high molecular weight high density polyethylene (col. 4, lines 26+). Giuffrida differs from the claimed invention only in that an ion exchange resin incorporated within a binder comprising a material such as "a very low density polyethylene ... processed using either Ziegler-Natta catalysts or Metallocene catalysts," (claim 1, lines 3-5) is not disclosed in a single embodiment.

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Examiner construes the term "processed" in the above-quoted phrase as synonymous with such terms as "produced", "prepared", "made", "synthesized" and the like. If this reading is incorrect, applicants should clarify the record by stating what "processed" is intended to mean, apart from using a Ziegler-Natta catalyst or a metallocene catalyst to make a very low density polyethylene.

With regard to the use of a very low density polyethylene binder, Giuffrida describes a single subclass of LLDPE as "linear very low density (LVLDPEs) having a density below about 0.915" and states that "the combination of linearity and low density provides ideal properties for producing a high quality, heterogeneous ion exchange membrane." (Giuffrida, col. 6, lines 18-31.)

Given Giuffrida's teaching of linearity and low density as ideal properties for producing a heterogeneous ion exchange membrane, one would have reasonably expected a very low density *linear* polyethylene to be a logical choice as the binder component of that membrane. Therefore, it would have been obvious to one of ordinary skill in the art to use as the binder component of the heterogeneous ion exchange membrane of Giuffrida, a linear very low density polyethylene as proposed therein.

With regard to the manner of preparing the LLDPEs, Giuffrida

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teaches that lower density linear polyethylenes are produced via copolymerization with substances such as propylene, butene, and various higher 1-olefins (col. 6, lines 22-24) but does not mention a specific polymerization catalyst.

Nevertheless, it is customary and commonplace in the prior art to make LLDPEs via Ziegler-Natta or metallocene catalyzed polymerization of ethylene with higher 1-olefins -- so common as to admit of Official notice. Hodgson, Jr. is cited merely to confirm this fact. See in particular column 3, lines 42-50, where the attractiveness of metallocene catalysts versus conventional Ziegler catalysts is discussed in the context of making a lower density ethylene copolymer, such as very low density polyethylene.

Practical considerations would have led to one of ordinary skill in the art to make the linear very low density polyethylene binder of Giuffrida by following standard prior art procedures, including the use of conventional catalysts customarily used to make this grade of polyethylene. To that end, it would have been obvious to one so skilled to fabricate the heterogeneous ion exchange membrane of Giuffrida by incorporating in an ion exchange resin a binder of linear very low density polyethylene processed using either a Ziegler-Natta or metallocene catalyst, as claimed.

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9. Claims 1 and 9 are rejected under 35 U.S.C. § 102(b) as being anticipated by US 3984358 to Nefedova et al.

Nefedova et al is considered to anticipate those embodiments of the claimed invention utilizing a co-polymer of vinylidene fluoride and hexafluoropropylene as the binder material of a heterogeneous ion exchange material. See Example 3, wherein a granulated cation exchanger is prepared using a "copolymer of hexafluorine propylene and vinylidene fluoride" (col. 4, lines 15-21). The chemical name "hexafluorine propylene" appears synonymous with "hexafluoropropylene" as recited in claims 1 and 9, and fluorine copolymers are identified as a binding agent at column 2, lines 35-37 of Nefedova et al. Further, the disclosed granulated ion exchanger is a composite material (see the Abstract and col. 3, lines 12-13), consistent with applicants' description of "macro-heterogeneous" (i.e., physical blending of pre-polymerized ion exchange resin and binder) (specification, page 3, lines 6-7). As such, the granulated ion exchanger of Nefedova et al is seen to meet all the essential limitations of claims 1 and 9.

10. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

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Hodgdon is pertinent in its disclosure of a fluorocarbon polymeric binder as a component of a heterogeneous cation exchange membrane (note col. 4, lines 50+).


11. Claim 8 would be allowable if amended or rewritten to overcome the rejection under 35 U.S.C. § 112 set forth in this Office action and to include all the limitations of the base claim and any intervening claim.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner F. M. Teskin whose telephone number is (703) 308-2456. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (703) 308-2450. The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

FMTeskin/12-12-03


FRED TESKIN
PRIMARY EXAMINER
12/5